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Asynchronous Online Discussion and Student Engagement

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Asynchronous Online Discussion and Student Engagement

by

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Abstract

Asynchronous Online Discussion and Student Engagement

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Online coursework has become increasingly popular among institutions of higher education over the last twenty years. As of 2011, 6.7 million students were taking at least one course online—32% of all students enrolled in degree-granting post-secondary institutions (Allen and Seaman 2013). Additionally, over 70% of academic officers recognize online learning as a part of the long-term strategies of those institutions. With online enrollment continuing to grow, it is vital that we understand how students engage course content and interact with each other in the online classroom. This report examines asynchronous online discussion in an effort to increase this understanding. I first examine how student engagement is defined, measured, and related to learning. I then review relevant literature to evaluate ways in which asynchronous online discussion promotes and challenges engagement with course material. Finally, I explore how students' online discussions can be improved.

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INTRODUCTION

There are many questions to be asked and answered when exploring how students engage any kind of coursework: What is meant by engagement? What, if anything, is a measure of that engagement? Does students' engagement with a course have any effect on students' success in that course? On students' satisfaction?

These questions above, when focused on online learning environments, remain difficult to answer. The introduction of the Web and its use in educational contexts changed not only the nature of educational materials, but also how students interact both with those materials and with fellow students. For more than twenty years, students have utilized online communication tools to respond to reading assignments, ask questions of instructors and classmates, and otherwise mimic asynchronously the interactions common to face-to-face discussions in classrooms. With increasing Internet speeds and bandwidths, new technologies exist to aid in content delivery and interaction with course materials. In addition to asynchronous text-based discussion forums, many students now have access to video conferencing tools that allow collaboration and consultation in real time with others in the course.

By understanding how and to what effect these tools are used, we can reshape online education to address a growing list of concerns: limited (or decreasing) budgets for faculty and teaching staff and the corresponding need to reach more students with fewer instructors; the desire by university administrators for courses of scale that reach increased numbers of residential and distance learners; and the realities of an economy that increasingly requires of its workforce technical skill, advanced training, and proper credentials.

Maximizing students' engagement with online course materials will benefit students as teaching tools such as discussion forums are employed more effectively.

To begin, I give context to the discussion of student engagement in online coursework by providing a brief history of online learning and situating online discussion within that history. I then provide definitions of "student engagement," discuss ways in which engagement is measured, and explain how it is an important component of the learning process. The remainder of my report examines the ways in which asynchronous online discussion enhances student engagement and investigates challenges to overcome in employing online discussion effectively.

Online Learning and Student Engagement: Definitions and Statistics

To provide context to my investigation of asynchronous online discussion and its relation to student engagement, I begin with an overview of online learning trends in higher education in the United States. I discuss briefly the history of online learning in higher education, and I situate asynchronous discussion within that history and provide an example of a common discussion format. I define "student engagement" and explain its measurement, how these measures relate to learning and engagement, and why student engagement is important.

Online Learning Trends in Higher Education

Since its introduction, online education has become increasingly popular among higher education institutions in the United States. Online and distance educational enrollments in the U.S. grew 3.2% from 2012 to 2013 (from

5,068,192 to 5,257,279). Total enrollments in public and private colleges and universities, meanwhile, increased only 1.2% in the same period (20,682,643 to 20,939,293 students). Growth in online and distance educational enrollments accounted for 73.7% of the increase in total higher educational enrollments (Allen and Seaman 2015).

As enrollments in online and distance education courses have increased, so too has esteem for those online courses. Of more than 2,400 academic officers surveyed in 2014, 74.1% responded that the learning outcomes of online education ranked “the same,” “somewhat superior,” or “superior” to learning outcomes of its face-to-face analogue. Additionally, 70.8% of those academic leaders report that “online learning is critical to their institution’s long term strategy,” a substantial increase from only 48.8% in 2002 (Allen and Seaman 2015, p. 18).

In addition to online coursework offered for credit toward a degree, many universities are offering massive open online courses, or MOOCs. Administrators see these classes, which generally do not grant college credit, as tools to “drive student recruitment” and “increase the visibility of [an] institution” because they often attract students numbering in the hundreds. In addition to increasing institutional visibility, MOOCs provide an opportunity to “experiment with innovative pedagogy” and “provide more flexible learning opportunities” to students (Allen and Seaman 2015, p. 34).

“Online enrollment” manifests in a number of ways, from face-to-face classes with some online components to courses taught entirely in an online environment. Table 1 reflects Allen and Seaman’s categorization of online coursework. Throughout this report, I use “online” two ways:

- in reference to courses conducted entirely online (what Allen and Seaman call “online” courses), and
- in reference to the online components of Allen and Seaman’s “web facilitated” and “blended” courses; i.e. online discussion forums included as part of classes that also meet face-to-face.

Proportion of Content Delivered Online	*Type of Course*	*Typical Description*
0%	Traditional	Course where no online technology used — content is delivered in writing or orally.
1 to 29%	Web Facilitated	Course that uses web-based technology to facilitate what is essentially a face-to-face course. May use a learning management system (LMS) or web pages to post the syllabus and assignments.
30 to 79%	Blended/Hybrid	Course that blends online and face-to-face delivery. Substantial proportion of the content is delivered online, typically uses online discussions, and typically has a reduced number of face-to-face meetings.
80+%	Online	A course where most or all of the content is delivered online. Typically have no face-to-face meetings.

Table 1. Typical course classifications (Allen and Seaman 2015).

Online Discussion as Part of Online Education

Online discussion—and, more broadly, online education—is older than the Internet itself and dates to the earliest days of ARPANET and email. Universities began using email and computer conferencing for class communications as early as the 1970s, supplementing students’ face-to-face interactions and continuing discussions begun in the classroom (Harasim 2000). Online undergraduate and graduate courses began appearing in the mid-1980s and grew in number with the launch of the World Wide Web.

Course websites began appearing at the start of the millennium. Up to that point, online discussion in educational contexts occurred primarily through individual and group email. Correspondence-based discussion continued into the early 2000s, as the transition toward course websites facilitated a move to discussion forums embedded in course sites.

As Internet speeds and bandwidths have increased, new technologies emerged to aid in content delivery and interaction with course materials. Learning management systems, such as Blackboard, WebCT, and Canvas, help instructors organize both face-to-face and online classes and give a home to course documents and text-based discussion forums. In addition to asynchronous text-based discussion forums, many students now have access to video conferencing tools that allow collaboration and consultation in real time with others in the course. Although these synchronous tools are interesting from the perspectives of both students and educators, I will not examine them in this report; instead, “online discussion” here is restricted to asynchronous, text-based discussion that is typically part of a blended or online course (see definitions above).

Discussions can be organized in a number of ways, depending on the course management system used to administer the class. Many of these course management systems arrange discussions in a threaded format, which indents students’ responses to classmates beneath an initial post. This format allows for many conversations to occur simultaneously, with each conversation nested neatly under an initial response. Figure 1 displays an example of a threaded discussion. An alternative to threaded discussion is a chronological format, in which each new post is added to the bottom of the discussion thread as it is

submitted. The chronological format gives readers a sense of the order in which responses were posted, but does not communicate the conversational nature of discussion posts as well as the threaded format.

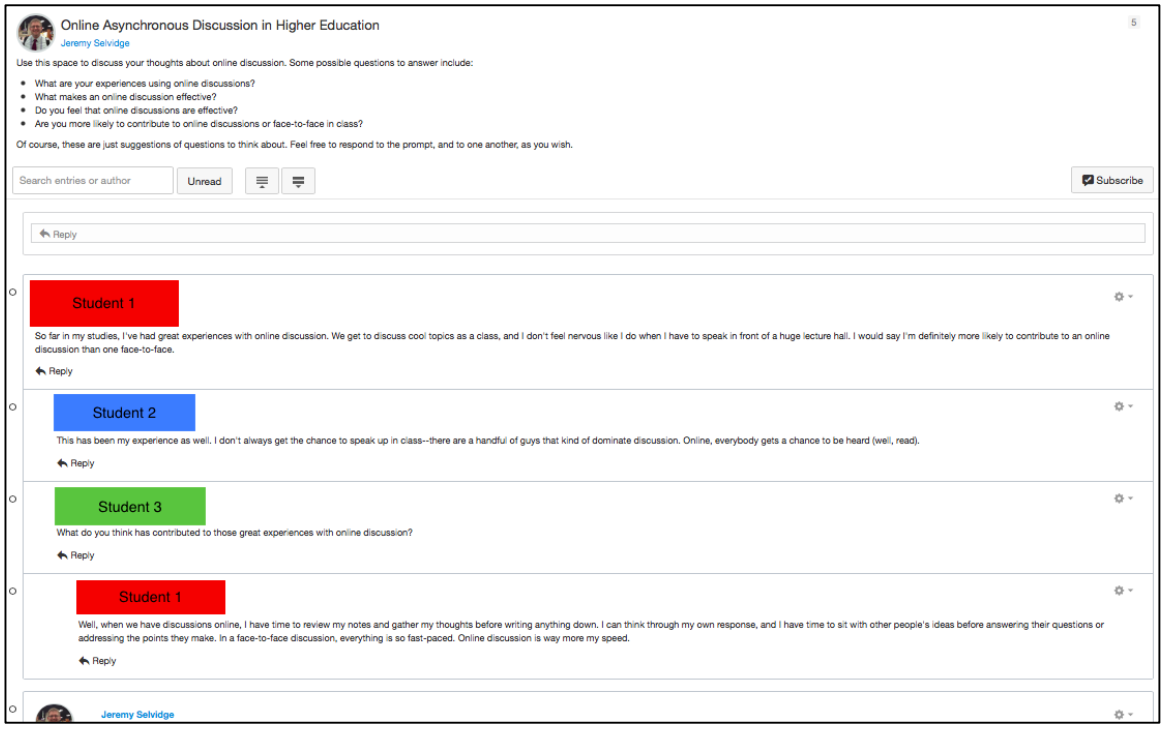

Figure 1. An example of a threaded online discussion in Canvas.

Student Engagement

"Student engagement" is a term with many definitions. This section of the report examines nineteen definitions of "student engagement" to produce a general idea of the concept. I explain how the National Survey of Student Engagement (NSSE) measures student engagement and discuss how NSSE engagement indicators relate to student learning using categories from Bloom's taxonomy. Finally, I discuss how student engagement relates to student success and posit why online discussions should be designed with engagement in mind.

Student Engagement Defined

"Student engagement" is a phrase used in many contexts and with a variety of meanings. Appleton, Christenson, and Furlong (2008) compiled a list of nineteen definitions they found in academic writing about the topic. Table 2 lists those definitions.

Source	**Definition**
Audas & Willms, 2001	Extent to which students *participate* in academic and nonacademic activities and *identify with* and *value* the goals of schooling
Connell & Wellborn, 1991	When *psychological needs* (i.e., autonomy, belonging, competence) *are met* within cultural enterprises such as family, school, and work, engagement occurs and is exhibited in *affect*, *behavior,* and *cognition* (if not, disaffection occurs)
Russell, Ainley, & Frydenberg, 2005	*Energy in action*, the connection between person and activity; consisting of three forms: *behavioral*, *emotional,* and *cognitive*
Skinner & Belmont, 1993	Sustained *behavioral involvement* in learning activities accompanied by *positive emotional tone* (vs. disaffection)
Skinner, Wellborn, & Connell, 1990	Initiation of *action, effort,* and *persistence with schoolwork* and ambient *emotional states* during learning activities
National Research Council/Institute of Medicine (2004)	Involves both *behaviors* and *emotions* and is mediated by perceptions of competence and control (*I can*), values and goals (*I want to*), and social connectedness (*I belong*)
Libby, 2004	Extent to which students are *motivated to learn* and *do well* in school
Fredericks, Blumenfeld, & Paris, 2004	*Emotional* (positive and negative reactions to teachers, classmates, academics, and school), *Behavioral* (participation in school), and *Cognitive* (investment) *Engagement* subtypes
Furlong *et al*., 2003	*Affective, Behavioral,* and *Cognitive Engagement* subtypes (same as Jimerson *et al*., 2003) within *student, peer group, classroom,* and *schoolwide contexts*

Table 2. Definitions of Engagement (Appleton, Christenson, and Furlong 2008).
(continued on next page)

Source	Definition
Jimerson, Campos, & Greif, 2003	*Affective* (feelings about school, teachers, and peers), *Behavioral* (observable actions), and *Cognitive* (perceptions and beliefs) *Engagement* subtypes
Chapman, 2003	*Willingness to participate* in routine school activities with subtle *cognitive, behavioral,* and *affective indicators* of student engagement in specific learning tasks
Natriello, 1984	*Student participation* in the activities offered as part of the school program
Yazzie-Mintz, 2007	*Cognitive/Intellectual/Academic* (students' effort, investment, and strategies for learning), *Social/Behavioral/Participatory* (social, extracurricular, and nonacademic school activities; interactions with peers), and *Emotional* (feelings of connection to school, including their performance, school climate, and relationships with others)
Marks, 2000	*Psychological process* involving the *attention*, *interest, investment,* and *effort* students expend in the work of learning
Newmann, Wehlage, & Lamborn, 1992	The student's *psychological investment* in and *effort* directed toward learning, understanding, or mastering the knowledge, skills, or crafts that academic work is intended to promote
Mosher & MacGowan, 1985	*Attitude* leading toward and *participatory behavior* in secondary school's programs (state of mind and way of behaving)
Klem & Connell, 2004	*Ongoing engagement* (behavioral, emotional, and cognitive components); *reaction to challenge* (ideally engage optimistically)
Christenson & Anderson, 2002	*Psychological* (e.g., belonging), *Behavioral* (e.g., participation), *Cognitive* (e.g., self-regulated learning), and *Academic* (e.g., time on task) *Engagement*
Finn, 1989, 1993; Finn & Rock, 1997	*Participation* in (at four increasing levels) and *identification* with school (belonging in school and valuing school-related outcomes)

Table 2. Definitions of Engagement (Appleton, Christenson, and Furlong 2008).

An examination of these definitions reveals some common themes. Many mention participation in academic work or the behaviors, actions, and effort undertaken by students in learning. Others mention motivations and persistence in academic endeavors. Still others discuss the investments in learning made by students. What this variety of definitions tells us is that "student engagement" is a broadly defined concept that touches on students' motivations to succeed

academically, their attitudes about learning, and their emotions in response to their education.

Measuring Students' Engagement

The 2013 National Survey of Student Engagement (NSSE) is a research instrument intended to "provide data… to assess and improve undergraduate education." More than 1,500 colleges and universities have participated in the survey over its fifteen-year history, including 613 in 2013 (NSSE 2013). The survey collects responses from first-year and senior students at these institutions, which are analyzed against a system of "engagement indicators" to evaluate national trends. These ten indicators are:

- Higher Order Learning,
- Reflective and Integrative Learning,
- Learning Strategies,
- Quantitative Reasoning,
- Collaborative Learning,
- Discussion with Diverse Others,
- Student-Faculty Interaction,
- Effective Teaching Practices,
- Quality of Interactions, and

  Supportive Environment.

These indicators shed light on how higher education institutions are encouraging learning and student success. For each indicator, students rate a number of statements on a scale from "very often" to "never." For example, to assess "Collaborative Learning," students rate how frequently they "asked another

student to help [them] understand course material" (NSSE 2013, p. 40). The survey publishes results collected for each college or university and reports data in the aggregate, to give a picture of student engagement in higher education throughout the United States.

It becomes clear how the measurements collected by the National Survey of Student Engagement relate to desired outcomes when engagement indicators are mapped to the categories of Bloom's taxonomy, expressed below in Figure 2 (old version, noun forms) and Figure 3 (revised version, verb forms). Table 3 demonstrates how selected survey items for seven of the ten engagement indicators map to the various levels of Bloom's revised taxonomy. The table ignores two indicators (Student-Faculty Interaction and Supportive Environment) because they relate to activities outside of class and are not applicable to an investigation of asynchronous online discussion. An additional indicator, Quality of Interactions, does not map to the categories of Bloom's taxonomy. Mapping these indicators to the levels of Bloom's taxonomy demonstrates how the National Survey of Student Engagement sufficiently assesses learning activities and therefore, according to the many definitions in Table 2, student engagement.

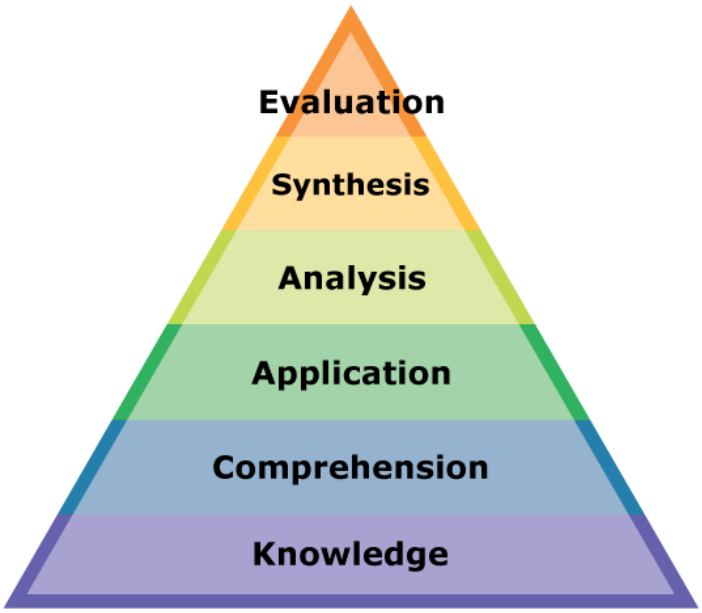

Figure 2. Bloom's taxonomy (old version, noun forms) (Coffey 2008).

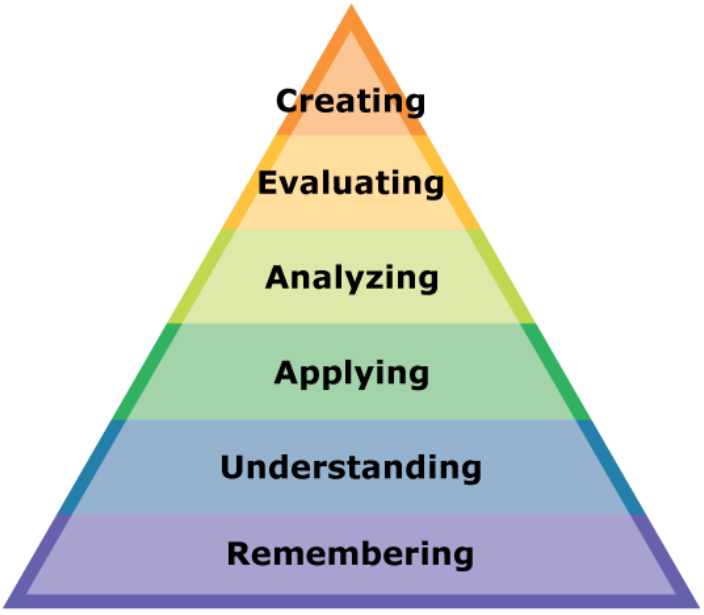

Figure 3. Bloom's taxonomy (revised version, verb forms) (Coffey 2008).

	Categories of Bloom's Revised Taxonomy					
Engagement Indicators	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating
Higher-Order Learning			Applying facts, theories, or methods to practical problems or new solutions	Analyzing an idea, experience, or line of reasoning in depth by examining its parts	Evaluating a point of view, decision, or information source	Forming a new idea or understanding from various pieces of information
Reflective & Integrative Learning		Learned something that changed the way you understand an issue or concept	Connected your learning to societal problems or issues; Included diverse perspectives (political, religious, racial/ethnic, gender, etc.) in course discussions or assignments; Connected ideas from your courses to your prior experiences and knowledge	Examined the strengths and weaknesses of your own views on a topic or issues; Tried to better understand someone else's views by imagining how an issue looks from his or her perspective	Combined ideas from different courses when completing assignments	
Learning Strategies	Reviewed your notes after class	Identified key information from reading assignments; Summarized what you learned in class or from course materials				

Table 3. Engagement Indicators mapped to Bloom's revised taxonomy (NSSE 2013, Krathwohl 2002). (continued on next page)

	Categories of Bloom's Revised Taxonomy					
Engagement Indicators	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating
Quantitative Reasoning				Reached conclusions based on your own analysis of numerical information (numbers, graphs, statistics, etc.); Used numerical information to examine a real-world problem or issue (unemployment, climate change, public health, etc.)	Evaluated what others have concluded from numerical information	
Collaborative Learning		Asked another student to help you understand course material; Explained course material to one or more students; Prepared for exams by discussing or working through course material with other students				
Discussions with Diverse Others	***Survey items for this engagement indicator map to any level of Bloom's taxonomy, depending on application in a course*** Had discussions with people from a race or ethnicity other than your own; Had discussions with people from an economic background other than your own; Had discussions with people with religious beliefs other than your own; Had discussions with people with political views other than your own					
Effective Teaching Practices		Instructors used examples or illustrations to explain difficult points [helps students to understand]				

Table 3. Engagement Indicators mapped to Bloom's revised taxonomy (NSSE 2013, Krathwohl 2002).

Importance of Students' Engagement

High engagement with coursework is desirable because engaged students learn more and are more likely than their less engaged peers to succeed. Kuh (2003) voices this sentiment in a commonsense way: "[T]he more students like a subject, the more they learn about it" (p. 23). By developing and presenting interesting course content and facilitating discussions and other activities that engage students, educators "add to the foundation of skills and dispositions that is essential to live a productive, satisfying life" (p. 25).

In a 2006 study, Carini, Kuh, and Klein found that measurements of student engagement are predictors of "learning and personal development" (p. 2). In that study, the researchers reported modest but statistically significant positive correlations between nine student engagement scales (that roughly correspond to NSSE indicators) and students' learning, as measured by grade point average. Those engagement scales are

- Level of academic challenge,
- Active and collaborative learning,
- Student-faculty interaction,
- Supportive campus climate,
- Reading and writing,
- Quality of relationships,
- Institutional emphasis on good practices,
- Student-faculty interactions concerning coursework, and
- Integration of diversity into coursework.

By better understanding how coursework, including online discussions, engages students, educators can enhance students' educational experiences and increase their chances of academic and developmental success.

ONLINE DISCUSSION ENHANCES STUDENT ENGAGEMENT

Participation in online discussion causes students to engage course materials and, as a result, enhances learning and benefits students. Active participation in discussions is linked to improved performance in a course, as measured by grade point average. Additionally, online discussion can aid in community construction within a group of learners and can help students build confidence in their ability to communicate. The asynchronous nature of online discussion allows students more time to develop thoughts and ideas than face-to-face discussion, and students who might not normally contribute to a conversation face-to-face use online discussion forums as a platform to share their ideas with their classmates and instructors.

Academic Enhancement

Krentler and Willis-Flurry (2005) studied the use of online discussion forums in a marketing class over a 20-month period. They found that students who used the discussion tool (i.e., contributed to online discussion in a post of at least five sentences and "express[ed] a coherent thought based on class theory rather than… personal opinion" (p. 318)) 76-100 percent of the time completed the course with a statistically significantly higher grade point average than their classmates. In particular, those students that used the discussion tool most frequently achieved an average grade point average of 2.69, compared to an

average grade point average of 2.38 for students who participated 51-75 percent of the time (p. 318).

Thomas (2002) found in his semester-long study of discussion forum use that the discussion forum promoted critical thinking (as established using the taxonomy developed by Norris and Ennis and published in their book, *Evaluating Critical Thinking* (1989)) among students in a lower-level undergraduate class (N=69), with nearly half of all posts made in the class demonstrating a high level of critical thinking and the majority of the remainder demonstrating at least some critical thinking (p. 358).

Cheng, Paré, Collimore, and Joordens (2010) conducted two studies examining voluntary student participation in online discussion forums in introductory psychology courses over two semesters. In their first experiment, 143 of the 1,284 students enrolled in the class (11.1%) posted at least once to the class discussion forum (p. 255). In the second experiment, 156 of 1,334 students (11.7%) posted at least once, while 654 students (49.0%) read (i.e., opened) at least one page of the class discussion (p. 257). Cheng *et al*. found in the first experiment that posting in the discussion forum positively correlated with graded performance on the course midterm and final exams, as well as improved performance on other graded assignments in the class compared to members of the class who did not post to the discussion forum; that is, students who participated in the online discussion forum were more likely to score slightly higher on course assignments and exams than students who did not participate. Interestingly, the second experiment revealed a similar positive correlation between merely reading discussion posts and course performance.

Wilson, Pollock, and Hamann (2007) corroborate this link between reading discussion posts and students' performance in their study of a course on Latin American politics. They found that the number of online discussion posts read by a student was a predictor of students' performance in the course, when controlled for that student's overall grade point average. In particular, those students who entered the course with a low grade point average (GPA ≤ 2.81) but read substantially more discussion posts than their classmates performed at or above expected levels. Wilson *et al*. suggest that "if lower-GPA students can become interested in discussion group material… they may generalize this engagement to the course material at large" and achieve a higher grade in that course than if they remained uninterested (p. 139). Carini, Kuh, and Klein's (2006) findings that students entering college with low SAT scores benefited more from engagement than their higher-scoring peers echo these conclusions and support more generally the idea that engagement has positive effects on students' performance.

Community Construction

Online discussion is a tool by which students may build a community of learners. In courses primarily or entirely online, it can be difficult for students to get to know one another and develop the type of trust that is necessary for collaboration to take place (Salmon 2000). An online discussion provides one of many opportunities by which students can introduce themselves and begin forming or deepening relationships with classmates, an activity that is essential for students learning together: "feeling included in a group is an important factor

for encouraging the true potential for learning to take place" (Bender 2003, quoted in Skinner 2009).

While this community-building aspect of discussion is important for classes conducted entirely online, it remains valuable for classes in which students meet face-to-face. An online discussion forum and face-to-face class meetings give students an additional opportunity to build relationships and interact with their peers in a meaningful way. Online discussion facilitates increased interaction among students, especially in high-enrollment courses, where class size makes it unlikely or impractical for a student to interact substantially with many of her classmates in a face-to-face meeting.

Bender (2003) suggests beginning an online course with a "virtual lounge": a discussion space designed exclusively for students to get to know one another (p. 39). Participation in this discussion space builds a sense of community within the class and (Bender claims) helps to remind students they are engaging with other human beings by posting to an online discussion forum, rather than simply launching thoughts into cyberspace.

Additionally, instructors can begin an introductory discussion as an icebreaker to jump-start interactions among students. Bender (2003) suggests having students introduce themselves or answer a handful of questions relative to the course topic that may also shed some light on their personalities or attitudes about the course. As an alternative, students can interview a classmate and later introduce him or her to the rest of the class using a shared discussion space (p. 49).

Democratizing Effect

Clawson, Deen, and Oxley (2002) note that online discussions extend conversations about course materials outside of a classroom setting or schedule, often continuing and further propelling in-class discussions and allowing students to elaborate on points already made, interject new thoughts, and ask questions that limited class time may not allow.

Asynchronous discussion also gives a voice to students who might otherwise be silenced in classroom conversations. In particular, because personal traits such as race or gender are not usually immediately evident in an online environment, women and members of ethnic minorities often have a voice in asynchronous discussions that is often unheard in a face-to-face setting. In a study of students' attitudes toward participation in an online graduate business course, Arbaugh (2000) found that, while women contributed about 45% of the comments (134 of 297 comments) in a face-to-face classroom discussion, female students were responsible for 65% of discussion (457 of 704 comments) in a comparable course online. Hamann, Pollock, and Wilson (2012) also note that women were better represented as self-reported frequent participants (where frequent participation is defined as making two or more contributions) in online discussions than either large or small-group classroom discussions (48% participation online and 31% face-to-face, in a class composition of 44% female/56% male). Wolfe (2000) suggests that increased participation by women in electronic communication compared to classroom interactions is a product of women's awareness "of the opportunity [it] gives them to interact free from interruption from other (male) students" (Clawson *et al.* 2002).

Additionally, online discussions provide a platform for students from historically oppressed groups to participate substantially more than in a face-to-face classroom setting. In their study of students' participation in large, small group, and online discussions, Hamann *et al.* (2012) found no African-American students who reported frequent participation (making two or more contributions) in discussions involving the entire class, even though African-American students were 11% of the class population (N=57). In online discussions, however, African-American students made up 21% of all frequent contributors.

Increased participation in online discussions is also evident for shy students and students from outside the United States, who may feel intimidated in a classroom setting and choose not to contribute to in-person discussions (Chang 2007). In these cases, online discussions give students an opportunity to observe the contributions and interactions of others and present their own ideas without the pressures of speaking aloud in class. While certainly not a perfect substitute for contributions aloud in a face-to-face discussion, online discussion forums are a channel for students to join conversations and have their ideas heard.

Bender (2003) notes the potential for online discussion forums to be a great equalizer, to strip away details about a contributor that might otherwise influence other students' perceptions of his ideas. In particular, she

> believe[s] that online teaching and learning has the potential to produce a true meeting of minds, because, being as it is, devoid of information which is extraneous in most courses, about factors such as age, race, possibly gender, and even such stereotypical distractions as clothing, hairstyle, accents of speech, and so on, one can fully concentrate on the intellects, interests, and personalities of the participants (p. 57).

It is debatable that divorcing a student's ideas and discussion contributions from the social and cultural contexts in which they were produced is beneficial, but obscuring personal characteristics in an online discussion environment may well combat biases that persist in face-to-face interactions.

Time for Reflection

Many researchers have reported that online discussion facilitates increased critical thinking (e.g. applying course information, evaluating classmates' contributions) and reflection by students compared with in-person discussion because, by definition, asynchronous discussion forums do not require students' immediate participation (Meyer 2003, Chang 2007). Participation in online discussion also produces a clear record of students' contributions and effectively logs the "flow of interaction" (Williams and Lahman 2011). A student participating in online discussions, then, has time to read through his classmates' responses, reflect on course materials, and refine his own thoughts before posting, without fear of being interrupted or forgetting his intended contribution to the conversation.

Meyer (2003) also notes the advantages afforded students by online discussion's asynchronous nature. In her ethnographic study of face-to-face versus threaded online discussion, participants stated that the online discussion gave them the opportunity to contribute what they wanted to the conversation—something not always possible in a face-to-face class meeting with its fast-paced discussion, quick transition from topic to topic, and competition between students for the conversational right-of-way. One study participant reported that, in the online discussion, "I finally got to have my say" (p. 61). And when students

utilized this time to “speak” in the online discussion, they benefitted from the ability to take time to read classmates’ remarks, think through their own contributions, and proofread their posts before publishing.

In addition to the benefits asynchrony provides for a single discussion topic or assignment, the structure of online discussion also permits students to return to material previously covered in the course throughout their term of study (Clawson and Rockeymoore 1999, cited in Clawson *et al.* 2002). Revisiting old discussions and contextualizing new information with themes already covered in a class encourages students to think critically about course materials by applying knowledge gained in the class to understand and evaluate the concepts they explore (Chang 2007).

Confidence in Communication

Participation in online discussion forums helps students gain confidence in their ability to communicate. Students from three universities participating in a shared online newsgroup (discussion forum) about women in politics reported improvements in both their writing and self-assessed “communication confidence” through surveys administered at the beginning and end of the studied term (Clawson *et al.* 2002).

Ho and McLeod (2008) also found that participants in an online discussion were more likely than face-to-face discussion participants to share their opinions, even when those opinions ran counter to that of the majority within the discussion.

Exposure to Diverse Ideas

As with in-class discussion, participation in online discussion forums increases students' exposure to perspectives and ideas. In addition to reporting improved communication, students in Clawson *et al.*'s 2002 study said that participation in the online newsgroup significantly improved their understanding of multiple points of view. Students received grades based on online newsgroup (discussion) participation, face-to-face class participation, a reading journal or paper, and an exam. Of these four graded assignments students, the discussion was the second most effective in helping students "understand diverse points of view" (p. 716).

Challenges Encountered in Online Discussion

Although online discussion enhances students' educational outcomes in many ways, it is not without drawbacks. Because of its asynchronous nature, online discussion may lack the "spark" of a face-to-face exchange. The online environment in which discussions take place can lead to misunderstandings due to lack of nuance in expression and disparaging remarks, or "flames," from discussion participants. Finally, students may not invest as much time or energy in online discussions as they would in face-to-face meetings. The sections below discuss these challenges in detail.

Asynchrony as challenge

The asynchronous nature of online discussions, which provide time for reflection and understanding as discussed above, also presents a challenge to students. It takes much more time to read discussion posts, contribute a response, and wait for other students' feedback than it does to participate in live

classroom discussion. Meyer (2003) notes that “online discussion requires a marked expansion of the time devoted to a particular class and its material” (p. 60). Students interviewed in that study commented on the different experiences of time in online and face-to-face discussions, saying there was a particular enjoyable “spark” or “energy” to lively classroom discussion that allowed for spontaneous thought, expanding ideas, and building on the comments of other students’ contributions to make new points. Online discussion, in comparison, was “slow” and lacked the enthusiasm that fuels face-to-face conversation. Even as students recognized the benefits of increased time for reflection and development of new ideas afforded by online discussion, they complained about the time it took to read and respond and also noted that occasional technical difficulties connecting to the discussion platform further slowed participation.

Lack of Nuance of Expression

One obvious drawback to online discussion and communication is the lack of social cues often present in face-to-face interactions. Facial expression, tone and volume of voice, and other indicators of mood and meaning are not communicated effectively in an online environment. Textual substitutes for these social cues, such as emoticons or capitalized text, can go only so far in indicating the meaning intended by the sender and are often misinterpreted. Ho and McLeod (2008) discussed this lack of nuance in an educational setting, finding that “intensity” and “extremity of… expression may become ambiguous” in online classroom discussions, making it difficult for others in the discussion to discern the intended meaning of discussion posts (p. 192).

Rudeness and Flaming

Because online interactions afford discussion participants a degree of anonymity (or perceived anonymity) greater than in face-to-face meetings, online discussion boards can become forums for rude sentiments, vulgarity, and flaming. Lee (2005) defines flaming as “a hostile expression of strong emotions such as swearing, insults, and name-calling” (p. 385). Flames occur for many reasons: differing opinions, disagreements within the discussion, prejudices such as racism or sexism, trolling (inciting frustration for the amusement of the person posting the flame), and others. Flaming tends to distract students from the intended discussion topic, disrupts students’ engagement with course materials and interactions with one another, and can cause students to censor themselves or stop posting altogether.

Similarly, the tone of an online discussion can leave students feeling unwelcome in the forum or disinclined to contribute to the conversation. Dwight (2004) notes how his female undergraduate students experienced intimidation in online discussion forums due to male students’ posts and the resulting “masculine discursive norms” that disenfranchised female students and made them feel uncomfortable in the discussion environment (p. 95).

Instructors can combat rude or unwelcoming expressions and flaming in an effort to make the online discussion a place for all students to share. Dwight instituted “rules of conduct” that challenged the observed masculine discursive norms and addressed the intimidation felt by his female students (p. 100). Lee (2005) suggests a number of ways to either actively combat or passively avoid flaming in online discussions. These methods include denouncing a flame outright, making jokes to deescalate tense situations, mediating disagreements

between two or more parties in a discussion, showing solidarity with the party on the receiving end of a flame, and ritualizing the behavior of frequent flamers (i.e., acknowledging the history of inflammatory remarks made by a person—for example, “don’t take it personally, he’s always like this”) to lessen their severity and impact (pp. 389, 394-397).

Learners’ Apathy

Just as in a face-to-face setting, the quality of online discussion is limited by the amount of time and effort students are willing to dedicate to reading (listening to) one another and developing thoughtful responses. While online discussions can be highly successful means for engaging students and motivating hearty discussion, they often fail to realize their full potential. Thomas (2002) found that use of an online discussion tool promoted interaction among students in a class, but this interaction among students “necessary for a truly conversational mode of learning”(p. 358); that is, the interactions showed little evidence of a “co-operative development of ideas among groups of students” (p. 359). Students’ posts and responses to one another in the online forum were the product of students going through the motions of the exercise, not a demonstration of collaborative development of ideas.

IMPROVING ONLINE DISCUSSION

Online discussion as an educational tool can enhance students’ learning, despite its drawbacks. Considerations about a discussion’s purpose and design must be made, however, if it is to be effective. One benefit of online discussion is its versatility and adaptability. In this section, I discuss some ways to adapt online discussion to promote desirable outcomes and engage students, including

instructor participation, required student participation, time allotted for discussion, group size, students' roles, and question design.

Instructors' Participation in Online Discussion

Online discussions are highly customizable, and instructors can shape them to meet the particular needs of a class. As discussion facilitator, a course instructor has great freedom to decide how to design, deploy, and manage online discussions.

In a six semester-long study, Mazzolini and Maddison (2007) conducted surveys of university students' attitudes about their courses, with particular focus on an online astronomy course. The researchers explored how the instructors' participation in online discussions affected students' participation rates. They found, in their examination of 375 discussion threads, a statistically significant negative correlation between the percentage of instructor postings within a forum and the total number of posts to that forum, as well as a statistically significant negative correlation between percentage of instructor postings and student posting rate. Additionally, threads started by instructors had a significantly lower student posting rates than threads started by other students. Despite this chilling effect of instructors' participation on students' participation, "students perceived instructors who posted often as being more enthusiastic and as displaying greater expertise than instructors who post infrequently" (p. 200). Finally, Mazzolini and Maddison found that instructors' participation in discussion forums had no significant effect on students' satisfaction with online discussion.

These findings suggest that frequent instructor participation in discussion forums dampens, rather than encourages, students' participation. Students

provided a possible explanation for and solution to this phenomenon in their responses to survey questions, stating that instructors should delay participating too heavily in online discussions or on answering students' questions. Letting questions linger gives students an opportunity to think about them and respond to one another, while an instructor's answer to a question closes discussion on that point. Instructors should, therefore, wait until the near-end of a discussion period to "clear up" any questions students may have had (p. 201). While frequency of instructors' posts correlates positively to students' perceptions of that instructor as enthusiastic and expert (instructors who posted more frequently were rated higher in the university's student evaluations), this correlation was stronger for those instructors who waited until the end of a discussion period (within two days of its closing) to make their contributions (p. 203).

DeLoach and Greenlaw (2005) temper Mazzolini and Maddison's conclusions with practical guidance for instructors about when to contribute. While instructors' participation may negatively affect students' participation rates, instructors should intervene when appropriate because "good discussions need to be managed effectively" (p. 162). Instructors' participation is necessary to address long unanswered questions or to direct discussion threads that go on too long, which makes it difficult for students to listen to one another. Nandi, Hamilton, and Harland (2012) echo the importance of striking a balance between too much and too little instructor participation.

Required Discussion Participation

Students can experience the benefits afforded them by online discussions only by participating in them. To motivate students to participate actively in online

discussions, instructors “should declare early in the course their expectations of the students on how to participate and acquire the best out of the discussion forum” (Nandi, Hamilton, and Harland 2012, p. 23). Hamann, Pollock, and Wilson (2009) also encourage active participation by students in online discussion and suggest, as an example, requiring that students reply to some number of their classmates’ postings (pp. 9-10). By requiring a minimum number of contributions per student for each discussion topic, instructors communicate clearly to students the level of participation expected of them.

Hamann *et al.* also report that the benefits to students of online discussion participation—namely, improved performance in the course as measured by grade point average—are better predicted by the number of posts read by students, rather than the number or quality of posts made by students (pp. 9-10). With this result in mind, instructors should consider crafting expectations for discussion participation in such a way that the reading of others’ discussion posts is required. One means of achieving this goal is to require some number of responses to classmates’ posts (in addition to a student’s own contribution to the discussion), “assuming that the students read a posting before venturing a response” (p. 9).

Time Limits

Time is an important consideration when designing online discussions that engage students. The discussion period must be long enough to allow students to reflect on the discussion topic, gather their thoughts, and respond to others; at the same time, too long a discussion period extends the exercise to a point where students stop responding and engagement with the topic ceases.

DeLoach and Greenlaw (2005) recommend a discussion period "between 10 and 14 days," finding, in their three semester-long study of electronic discussion at two universities, that less time prevented discussions from fully developing and discussion periods longer than two weeks became "unproductive" (p. 162).

Discussion Group Size

In large classes, the large number of posts to a single discussion can overwhelm a student. To avoid overwhelming students and allow them to more deeply engage course materials and interact with one another, instructors should divide students into small groups. Bender (2003) suggests groups of no more than four to five students, as this small group size allows students to communicate intimately (p. 119).

In a study of discussion group size at a large midwestern university, Lowry, Roberts, Romano, Cheney, and Hightower (2006) investigated differences in communication among groups of three and six students in face-to-face, blended, and online discussion environments. Students (439 total) used these discussion groups to work together to complete a heuristic evaluation task. Lowry *et al.* found that, along the measures of "appropriateness [of response to the assigned task], openness, and accuracy," three-person groups experienced better communication than six-person groups (p. 654).

Students' Roles

Bender (2003) suggests assigning specific roles to students to encourage engagement with course materials (p. 71). A student designated "discussion leader," for example, takes the lead in studying a particular topic and develops questions for the class to answer. This additional responsibility and sense of

purpose in the online classroom can lead students to interact with materials and lessons in more depth than they might without an assigned discussion role.

Question and Discussion Design

Instructors should form discussion questions in such a way that students engage them in meaningful ways (Bender 2003, p. 70). Questions with "yes/no" answers do not motivate students to critically engage course materials beyond Bloom's levels of knowledge (remember) or comprehension (understand) and can result in little student participation. Similarly, Bender suggests asking students to substantiate their opinions when responding, which encourages interactions with materials at a higher level than simply making a statement (for example, synthesis of multiple ideas or analysis of course materials). DeLoach and Greenlaw (2005) advise instructors to "think carefully about . . . discussion assignment[s]," to consider what objectives the discussion is intended to achieve (p. 161), and to design discussion assignments with those objectives in mind. Instructors must set students up to succeed by making these objectives within students' reach; for example, "[I]f the goal of the discussion is to evaluate competing arguments, there must be data readily available for students to use" (p. 161).

In addition to question design, discussion format is an important consideration. Threaded discussions allow for many conversations to take place at once, with each student's response tied neatly to the discussion topic it addresses (Bender 2003, p. 72). This format, the default in many online classroom management systems, is not without difficulty. To avoid confusion, "mention people by name and give a brief synopsis of what they say before

responding" so students can more easily follow the thread of conversation (Bender 2003, p. 73).

Conclusion and Areas of Further Study

Online learning continues to grow in popularity with colleges and universities across the United States and around the globe. To develop effective online courses and instructional materials, we must understand how aspects of those courses, including asynchronous discussion, promote learning and encourage engagement with course subjects and materials.

Online asynchronous discussion, when employed thoughtfully and with student engagement in mind, can be a powerful tool that promotes community construction, helps students to build confidence in their ability to communicate, and provides an opportunity for students to reflect on course materials and share their ideas with others. To students who may not feel comfortable speaking up in a face-to-face setting, online discussion provides an additional channel by which they can contribute to class conversations and share insights and perspectives on course content that might otherwise go unacknowledged. The asynchronous nature of online discussion allows students an opportunity to thoughtfully prepare responses to course material and to one another, while increased time for reflection permits participants to apply, analyze, and evaluate information and create new ideas.

Although it is not without its challenges, online discussion can and does prove to be beneficial to those students who participate in them. As with any aspect of a course, instructors must design and develop discussion with intentionality and an understanding of best practices. Additionally, it remains the

responsibility of the instructor to direct these discussions effectively and with consideration paid to how the design of discussion promotes engagement with course materials and enhances learning. By understanding the effects that time limits, participation requirements, and frequency of posts by instructors have on students' participation rates and engagement levels, instructors can design and moderate discussions optimized for learning to take place.

Asynchronous discussion is just one means by which students and instructors can communicate in a course. Instant messaging, or synchronous chat and discussion, approximates the immediacy of a face-to-face discussion in an online environment and is currently used in some online courses. Additionally, as faster Internet speeds have made possible streaming audio and video, instructors increasingly use webcasts and video chats to deliver educational materials in distance or online courses. Research into the use and effectiveness of these technologies lags far behind that of asynchronous discussion, and the important work of understanding how they influence student engagement and learning remains to be done. In future works of research, I hope to explore how these and other new technologies can best be employed to facilitate learning and engagement and meet the needs of instructors and students.

Understanding the impact of online discussion (and, more generally, online education as a whole) on students' engagement and learning allows educators to improve course design, achieve desirable learning outcomes, and maximize students' chances for academic success. These results are increasingly important as online education offerings continue to expand. With a growing number of colleges and universities looking to online education as a means of increasing their student populations, research such as this into the

impact of online learning tools will be as important as ever for providing education of the highest quality.

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